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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,618	07/18/2005	Megumu Nagasawa	2005_1140A	7292

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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1795	

NOTIFICATION DATE	DELIVERY MODE
07/12/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/542,618	NAGASAWA ET AL.	
	Examiner	Art Unit	
	Jonathan Crepeau	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,10,14 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,10,14 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 21, 2010 has been entered.

This Office Action addresses claims 1, 10 and newly added claims 14 and 15. The claims are newly rejected under 35 USC 103. This action is non-final.

Claim Rejections - 35 USC § 103

2. Claims 1, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leddy et al (U.S. Pre-Grant Publication No. 2005/0084741).

Leddy et al. teach a fuel cell comprising electrodes and a proton exchange electrolyte membrane. In [0047] -[0052], the reference discloses that the electrodes each comprise an electroconductive porous substrate, a catalyst such as platinum, and a proton-conductive ion exchange electrolytic polymer (perfluorinated sulfonic acid). The catalytic material in both electrodes may also comprise a magnetically modified material (see [0058]) which may further comprise a coating comprising a polymer such as styrene or styrene derivative (see [0077]). In particular, as disclosed in [0101], the magnetically modified material may comprise particles of

iron oxide coated with poly(4-styrene sulfonic acid)-polystyrene copolymer, which corresponds to the "polymeric acid" of claims 1 and 15.

Leddy et al. do not teach that the polymeric acid has an ion exchange capacity of 1.6 mg/eq or more, as recited in claims 1 and 15.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use a sulfonic acid polymer with a high proton conductivity in the electrodes of Leddy et al. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). In this case, Leddy et al. teach in [0077] that the coating material affects at least one chemical or physical property of the particle, including hydrophilicity, hydrophobicity, and ion conductivity, among others. In [0078] it is taught that "particularly preferred modifying materials are those that improve the water concentration about the particle(s) and any nearby catalyst component(s) and/or local ionic conductivity." Accordingly, as the ion exchange capacity is a parameter that affects the hydrophilicity and the ionic conductivity of the material, the use of a material having a high ion exchange capacity as recited in the claims would be obvious to a skilled artisan.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leddy et al. as applied to claims 1, 14, and 15 above, and further in view of JP 2000-195489.

Leddy et al. do not expressly teach that the polymeric acid is a styrene/vinylsulfonic acid copolymer, as recited in claim 10.

JP '489 is directed to a battery separator comprising a polyethylene porous sheet that is treated with a solution of styrene-vinylsulfonic acid copolymer to render it hydrophilic (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. In particular, JP '489 discloses that the purpose of the copolymer treatment is to render the sheet hydrophilic. Since such hydrophilicity would be a beneficial quality in the electrodes of Leddy et al., it would have been obvious to use styrene-vinylsulfonic acid copolymer for this purpose. Further, as noted above, Leddy et al. also teach that styrene polymers and their derivatives are useful as the coating polymer of the magnetically modified material. Accordingly, claim 10 would be rendered obvious.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley, can be reached at (571) 272-1453. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795
July 8, 2010